We claim:

1. A radiosensitizer agent for treatment of diseased tissue using radiosensitization or ionizing radiation comprising: a halogenated xanthene.

2. The agent of Claim 1, wherein said halogenated xanthene is selected from the group comprising Rose Bengal and its derivatives.

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3. The agent of Claim 1, wherein said halogenated xanthene is selected from the group comprising 4,5,6,7-Tetrabromoerythrosin and its derivatives.

4. The agent of Claim 1 wherein said halogenated xanthene includes as a functional derivative a targeting moiety selected from the group comprising DNA, RNA, amino acids, proteins, antibodies, ligands, haptens, carbohydrate receptors or complexing agents, lipid receptors or complexing agents, protein receptors or complexing agents, chelators, encapsulating vehicles short- or long-chain aliphatic or aromatic hydrocarbons, including those containing aldehydes, ketones, alcohols, esters, amides, amines, nitriles, azides, or other hydrophilic or hydrophobic moieties.

5. The agent of Claim 1 wherein said radiosensitizer agent also is an imaging contrast agent.

6. The agent of Claim 5 wherein said radiosensitizer acts as an imaging contrast agent for CAT scan.

7. The agent of Claim 5 wherein said radiosensitizer acts as an imaging contrast agent for X-ray imaging.

8. The agent of Claim 1 wherein said halogenated xanthene has a large content of an element selected from the group comprising iodine and bromine.

9. The agent of Claim 1 wherein said agent is a halogenated xanthene selected from the group comprising Phloxine B, Erythrosin B and Eosin Y and their derivatives.

10. The agent of Claim 1 wherein said halogenated xanthene is activated using x-rays having an energy greater than 30 keV.

11. The agent of Claim 1 wherein said agent is encapsulated in a delivery vehicle, said vehicle being selected from the group comprising a micelle, nanoparticle, and liposome.

12. A radiosensitizer agent for treatment of diseased tissue using radiosensitization or ionizing radiation wherein said agent exhibits a preference for concentration in biologically sensitive structures in tissue.

13. The agent of Claim 12 wherein said agent exhibits a preference for concentration in cellular membranes.

14. The agent of Claim 12 wherein said agent biologically targets said biologically sensitive structures.

15. The agent of Claim 12 wherein said agent chemically targets said biologically sensitive structures.

16. The agent of Claim 14 wherein said targeting is by chemical partitioning of the agent at a position at, near or into the biologically sensitive structure.

17. The agent of Claim 14 wherein said targeting is by controlling agent delivery at a position at, near or into the biologically sensitive structure.

18. The agent of Claim 17 wherein said agent is delivered by encapsulation of said agent in a delivery vehicle.

19. The agent of Claim 18 wherein said agent is Rose Bengal or its derivatives.

20. The agent of Claim 19 wherein said delivery vehicle is selected from the group comprising a micelle, a nanoparticle and a liposome.

21. The agent of Claim 14 wherein said targeting is by physically increasing local concentration of said agent at a position at, near or into the biologically sensitive structure.

22. The agent of Claim 21 wherein said physical increasing local concentration of said agent is selected from the group comprising injection, flooding and spraying.

23. The agent of Claim 15 wherein said targeting is by chemical partitioning of the agent at a position at, near or into the biologically sensitive structure.

24. The agent of Claim 15 wherein said targeting is by controlling agent delivery at a position at, near or into the biologically sensitive structure.

25. The agent of Claim 24 wherein said agent is delivered by encapsulation of said agent in a delivery vehicle.

26. The agent of Claim 25 wherein said agent is Rose Bengal.

27. The agent of Claim 26 wherein said delivery vehicle is selected from the group comprising a micelle, a nanoparticle and a liposome.

28. The agent of Claim 15 wherein said targeting is by physically increasing local concentration of said agent at a position at, near or into the biologically sensitive structure.

29. The agent of Claim 28 wherein said physical increasing local concentration of said agent is selected from the group comprising injection, flooding and spraying.

30. The agent of Claim 12, wherein said agent is a halogenated xanthene.

31. A method of treating diseased tissue comprising the steps of:

administering a radiosensitizer agent to a patient, a portion of said radiosensitizer agent being retained in said diseased tissue; and

treating said diseased tissue with x-rays or other ionizing radiation so as to activate said retained radiosensitizer agent in said diseased tissue,

wherein said radiosensitizer agent is a halogenated xanthene.

32. The method of Claim 31 wherein said halogenated xanthene is Rose Bengal or its derivatives.

33. The method of Claim 31 wherein said halogenated xanthene includes as a functional derivative a targeting moiety selected from the group comprising DNA, RNA, amino acids, proteins, antibodies, ligands, haptens, carbohydrate receptors or complexing agents, lipid receptors or complexing agents, protein receptors or complexing agents, chelators, encapsulating vehicles, short- or long-chain aliphatic or aromatic hydrocarbons, including those containing aldehydes, ketones, alcohols, esters, amides, amines, nitriles, azides, or other hydrophilic or hydrophobic moieties.

34. The method of Claim 31 further comprising the step of imaging said patient using said radiosensitizer agent and radiation to identify said diseased tissue.

35. The method of Claim 34 wherein imaging is accomplished through a method selected from the group comprising computerized axial tomography and x-ray imaging.

36. The method of Claim 31 wherein said halogenated xanthene is selected from the group comprising iodinated and brominated halogenated xanthenes.

37. The method of Claim 34 wherein said halogenated xanthene is selected from the group comprising Rose Bengal, Phloxine B, Erythrosin B and Eosin Y and their derivatives.

38. The method of Claim 31 wherein said agent is administered by localized delivery.

39. The method of Claim 31 wherein said agent is administered via injection

40. The method of Claim 31 wherein said agent is administered by flooding.

41. The method of Claim 31 wherein said agent is administered by spraying.

42. The method of Claim 31 wherein said agent is encapsulated in a delivery vehicle, said vehicle being selected from the group comprising a micelle, nanoparticle, and liposome.

43. The method of Claim 31 further comprising biologically targeting of biologically sensitive structures in said diseased tissue by said agent.

44. The method of Claim 31 further comprising chemically targeting of biologically sensitive structures in said diseased tissue by said agent.

45. The method of Claim 43 wherein said targeting is by chemical partitioning of the agent at a position at, near or into the biologically sensitive structure.

46. The method of Claim 43 wherein said targeting is by controlling agent delivery at a position at, near or into the biologically sensitive structure.

47. The method of Claim 43 wherein said biologically sensitive structure is cellular membranes in the diseased tissue.

48. The method of Claim 44 wherein said targeting is by chemical partitioning of the agent at a position at, near or into the biologically sensitive structure.

49. The method of Claim 44 wherein said targeting is by controlling agent delivery at a position at, near or into the biologically sensitive structure.

50. The method of Claim 44 wherein said biologically sensitive structure is cellular membranes in the diseased tissue.

51. The agent of Claim 1 wherein said ionizing radiation is approximately greater than or equal to 1 keV and less than or equal to approximately 1000 MeV.

52. The agent of Claim 12 wherein said ionizing radiation is approximately greater than or equal to 1 keV and less than or equal to approximately 1000 MeV.

53. The method of Claim 31 wherein said ionizing radiation is approximately greater than or equal to 1 keV and less than or equal to approximately 1000 MeV.

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